geography, painting of typical landscapes. Record of observations in nature study.

Manual training—Visits to the shops to see good hand-made furniture and smaller articles of handcraft. Designing and making of articles, with accompanying lessons in mechanical drawing.

SEVENTH GRADE.

ELSIE AMY WYGANT.

The subject chosen for study during the winter quarter is the period of geographical discovery from the time of Marco Polo to the circumnavigation of the world by the ships of Magellan. This period is so rich in its possibilities of interest that it seems wise to devote the time of the four "central subjects" to the development of its various aspects—historical, geographical, scientific, and mathematical.

The historical topics of the subject will be somewhat as follows: Greek conception of the earth as a plane bounded by Oceanus; the later doctrine that the earth is spherical, that the sun and stars revolve about the earth; the belief that the earth is divided into zones, with a tropic zone which is impassable on account of the intensity of heat; estimates of the dimensions of the earth.

The effect of the crusades upon travel, and of the travels of Marco Polo upon geographical interest of the period.

Henry, Prince of Portugal, "the Navigator," his discoveries and his explorations which proved the fallacy of the Greek theory of the tropics.

The enthusiasm in the search for a water route to India increased by the tales of travelers from the East.

A new route to India made imperative by the fall of Constantinople in 1453.

Life and work of the three great explorers, Christopher Columbus, Vasco da Gama, and Ferdinand Magellan.

REFERENCES: ELEMENTARY SCHOOL TEACHER, Vol. II, No. 8, pages 626–8 (in this article Miss Deratt has worked out the above subject for the seventh grade, including a most helpful bibliography, which is largely quoted below); Fiske, *Discovery of America*,[1] B 1978; Payne, *History of America*, B 1985; Draper, *Intellectual Development of Europe*; Yule, *Cathay and the Way Thither*, I 2376; Yule, *Marco Polo, His Book*, Vols. I and II, I 1576; Winsor, *Narrative and Critical History of America*, Vols. I and II, B 1980; N. Ponce de Léon, *Caravels of Columbus*, V 1562; Ford, *Writings of Columbus*, C 10651; Guillemard, *Magellan*, C 11235; Irving, *Columbus*,

[1] Throughout the article the references are followed by the Chicago Public Library cataloguing in the hope of saving Chicago readers some time and effort.

I 3579; Kingsley, *The Hermits*, C 104; Lamartine, *Life and Time of Columbus*, P 623; Vasco da Gama, *Century*, Vol. II, p. 163: "Marco Polo," *Harper's*, Vol. XLVI, p. 1; "Magellan," *ibid.*, Vol. LXXXI, p. 357; "The Great Voyagers," *ibid.*, Vol. XX, p. 234; "Columbus," *Century*, Vol. XXII, p. 123; *Harper's*, Vol. XXXVIII, p. 721.

Parts of the above and the following list can be used by the children:

Becker, *Adventurous Lives*, Vol. II., pp. 63–85, C 1300; S. K. Bolton, *Famous Voyagers*, C 10276; Fawle, *Marco Polo*, C 1610, and *Magellan, or First Voyage Around the World*, Vol. III, C 1610; Wright, *Marco Polo*, I 3358; Murray, *Marco Polo*, I 3764; Knox, *Travels of Marco Polo for Boys and Girls*, I 8083; Brooks, *Marco Polo;* Hall, *Stories of Adventure;* Seelye, *Columbus;* Hale, *Stories of Discovery;* Beazley, *Prince Henry, the Navigator.*

Geography.—To get a sympathetic view of the explorers of this period of geographical discovery necessitates seeing clearly their environment and recognizing the geographical problems which confronted them.

The "known world" of Ptolemy will be compared with the present known world.

A possible route will be traced westward from Spain to India, through the Panama canal. The advantage of this canal in shortening the route will be discussed.

A general conception of Eurasia will be gathered by the following study: Known routes from Europe to the East in Marco Polo's time. Length of Marco Polo's journey, and detailed study of China and India in this connection. Effect of location of mountains, plains, plateaus, and rivers upon routes of travel and centers of civilization. Home of the great explorers, the Spanish peninsula.

The northern and western coast of Africa will be studied in connection with the discoveries by Prince Henry. Following Vasco da Gama's route the study of Africa as a continent will be concluded.

An outgrowth of the story of the circumnavigation of the world by the ships of Magellan will be a general view of the relation of the continents, the location of the great islands, and a special study of the Philippines.

The class will make several visits to the Field Museum. Physical, relief, and contour maps, pictures and lantern slides will be used, and costumes and materials from the various countries will be brought into the class-room.

Distances will be translated into terms of time necessary to travel the route by modern methods. The following table may aid in gaining a standard of distance:

	Approximate.	Actual.
Chicago to Aurora	40 miles	40 miles
Elgin	40	40
Joliet	40	40
Dune Park	40	40
Milwaukee	85	85
Lake Geneva	85	85
Ottawa, Ill.	85	84

	Approximate.	Actual.
Chicago to Elkhart, Ind.	100 miles	100 miles
La Salle, Ill.	100	99
Bloomington, Ill.	100	126
Rockford, Ill.	100	92
Toledo	300	244
Cleveland	300	357
Des Moines	300	350
St. Louis	300	378
Toronto	500	507
Omaha	500	503
St. Paul	500	510
Kansas City	500	518
New York	1,000	910
Boston	1,000	1,039
Denver	1,000	1,083
San Francisco	2,500	2,421
Portland	2,500	2,540

During the work the children will make maps of Eurasia, Africa, China, India, the Philippines, and the eastern hemisphere. They will use various material, such as sand, composite clay, pencil, and chalk. They will picture by means of paints and pencil typical scenes, the people, their customary employment, characteristic clothing, and habitat.

REFERENCES: ELEMENTARY SCHOOL TEACHER, Vol. II, No. 1, pp. 53–6; Keane, *Evolution of Geography*, I 9867; Bunbury, *History of Ancient Geography*, I 2198; Bevan and Philott, *Mediæval Geography;* Vincent, *Commerce and Navigation of the Ancients in the Indian Ocean;* Jacobs, *Story of Geographical Discovery*, I 9866.

Eurasia: Stanford, *Compendium of Asia*, *Compendium of Europe;* Mill, *Realm of Nature;* Réclus, *Earth and Its Inhabitants*, volumes on Europe and Asia, R 701; Mill, *International Geography*, I 9872; Sven Hedin, *Through Asia.*

China: Williams, *Middle Kingdom;* Huc, *Chinese Empire* and *Travels in Tartary, Thibet, and China;* Smith, *Village Life in China;* Vincent, *The Land of the White Elephant*, I 1386; see *Poole's Index* and *Chicago Public Library Card Catalogue* for full bibliography.

India: *Statistical Map of India*, 1895; Hunter, *Indian Empire; Brief History of Indian People;* Murray, *Handbook of India, Burma, and Ceylon;* Ferguson, *History of Indian and Eastern Architecture*, Chicago Public Library list catalogues, 150 books on India.

Science.—Those natural forces which affect navigation will be considered in so far as the understanding of them is necessary to the appreciation of the work of the explorers.

The wind: its cause and movement; trade winds and the calms of the equator and of Capricorn and Cancer.

Storms: cause, methods of forecasting (air pressure, forms of clouds, meaning of "high and low areas," "storm center," etc.).

Ocean currents: cause, direction, effect.

The observations recorded on the weather chart will be those which will aid in the work of mathematical geography, such as observations of length of day and night, and movement of sun, moon, and stars.

Records of monthly amount of rainfall and of the daily temperature will be continued, as these are essential to the conception of a seasonal picture which the children began to gain in October.

REFERENCES: Parker, *Familiar Talks on Astronomy* (this text-book will be used by the children), K 8627; Young, *The Elements of Navigation*, K 5798; Giberne, *The Ocean of Air*, K 7498; Ferrel, *Popular Treatise of the Winds*, K 7450. Any good physical geography.

Mathematics.— In order that the children may appreciate the heroism and sagacity of the explorers of this period, the problems which occupied them must be met and solved by the children's own efforts, not by their acceptance of the world's knowledge. To state the fact that the earth is round is today a simple matter; to prove it today approaches the mental stimulus of its discovery. For this reason the following problems will be presented: Is the earth a sphere? If today you could be put into the midst of those men of the Middle Ages, could you prove its shape to them?

Proofs: appearance of vessel coming in from sea; circumnavigation of the globe; the higher one ascends, the more he can see; shape of the horizon; form of earth's shadow on the moon. Here it will be necessary to teach the relation of earth, sun, and moon; the term "tangent of a circle."

Before marine instruments were perfected, how did sailors map their course when beyond sight of land? This involves teaching of subject of longitude and time; location of pole-star and "dipper;" latitude found by comparison with altitude of pole-star; four positions of "dipper" which indicate pole-star to be at its upper or lower culmination, due east or west of the pole; what is meant by altitude of a star; how to measure this angle.

The observations made daily on varying length of day and night; movement of sun, moon, and stars; change of season will be considered and explanations worked out.

Manual Training.— During the quarter each child will make a model of a vessel so that the series may illustrate the development of boat-making. Some such series as the following will be made and given to the school museum. The series used will be worked out by the class; then each pupil will choose the vessel he wishes to make and devote his study to this particular type. The models at the museum will be studied and books put at his disposal for study:

(1) Floating log; (2) Logs bound together (catamaran); (3) Logs bound together with bush for sail; (4) Dugout; (5) Welsh coracles; Egyptian boat; Greek galley; Norse ship; Moorish corsair; Venetian gondola; Chinese junk; Columbus's ship; "Mayflower;" Mississippi sidewheeler; steamship; gunboat (using sheet tin for covering); plans and drawings of modern liners.

EIGHTH GRADE.

KATHARINE M. STILWELL.

IN the winter quarter it is purposed to give the pupils of this grade, largely by the use of literature, some ideals of social and political life.

The work in Roman history, consisting of some phases of both the external and internal growth of the Romans, will also be used for this purpose. The class will follow the growth of Rome from a small city-state on the coast to a power in control of the whole Italian peninsula. Details of the wars will not be discussed, but conditions, such as the state of civilization of the Italians and their geographical environment, will be presented, which will enable the pupils to reason out the conflict between the plain and the mountain peoples. They will be led to regard this as a struggle in the interests of civilization which resulted in the unity of Italy. At this point they will compare the Roman increase of territory with the movement of the American people from the Atlantic coast plain to the middle and western United States.

They will study the Roman method of governing the conquered peoples, getting information from the different textbooks at their disposal.

The pupils will next consider the situation and character of the Mediterranean states and Rome's relation to these. They will thus see what Rome had to fear from Carthage, and how for her own preservation it was essential to her that the Carthaginians should advance no farther eastward. This will help them to understand the causes of the Punic wars. They will then read the story of Hannibal from Plutarch's *Lives*.

The class will see how, as a result of this war, Rome entered